

Appl. No. : 10/654,068
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REMARKS

Claims 1-20 are currently pending. Claims 1 and 10 are amended herein.

Rejections Under 35 U.S.C. §103

Claims 1-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hunter et al., U.S. Patent No. 6,151,446, in view of Savage et al., U.S. Patent No. 6,610,150. Claim 1 has been amended to recite holding the substrate above the substrate support for a substrate preheat period, wherein the substrate is not in contact with any heated elements of the process chamber during the preheat period. Claim 10 has been similarly amended to recite preheating the substrate at the location, wherein the substrate is not in contact with any heated elements of the processing chamber while the substrate is preheating. These amendments are fully supported by the specification as originally filed at, for example, paragraphs [0016]-[0017] and Figure 1.

Neither Hunter et al. nor Savage et al. teach or suggest preheating the substrate, wherein the substrate is not in contact with any heated elements of the process chamber while the substrate is preheated, as recited in amended Claims 1 and 10. Both Hunter et al. and Savage et al. disclose using lift pins to support a substrate during the preheat period. *See, e.g.*, Hunter et al., at Col. 3, line 63 – Col. 4, line 2 and Fig. 1A; Savage et al., at Col. 10, lines 52-62, Col. 15, lines 39-53. Thus, in both Hunter et al. and Savage et al., the lift pins are in contact with the substrate during the preheat period. Savage et al. disclose a process chamber 40 for processing wafers at elevated temperatures. The process chamber 40 has a wafer chuck assembly 60, which includes a heating element for preheating an unprocessed wafer prior to CVD processing. The wafer chuck 60 also includes lift pins 70 for supporting the wafer above the chuck 60 to preheat the wafer, before the wafer is lowered to the surface of the chuck 60 for processing. The lift pins 70 are therefore heated elements of the process chamber and are in contact with the substrate during the preheat period.

Similarly, Hunter et al. disclose process chamber having a lift pin assembly 36 that supports the “substrate 20 in a fixed position adjacent to radiant heat source 16” during the preheat period. Hunter et al. teach to heat the interior of the process chamber 12 prior to moving a substrate 20 into the chamber 12 onto the lift pin assembly 36. *See* Hunter et al., at Col. 3, line

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56 – Col. 4, line 4. Thus, the lift pins 36 are heated elements of the process chamber that are in contact with the substrate during the preheat period.

Neither Savage et al. nor Hunter et al. provide any motivation or suggestion for preheating a substrate, wherein the substrate is not in contact with any heated elements of the process chamber while the substrate is preheated, as recited in amended Claims 1 and 10. Furthermore, neither of the cited references teaches or suggests high temperature processing (e.g., maintaining the substrate support at greater than 900 °C or at the process temperature during the substrate preheat period). Claims 1 and 10, as amended, are therefore patentable over Savage et al. and Hunter et al. Claims 2-9 and 11-20, which depend from and include all of the limitations of Claim 1 or Claim 10, are therefore also patentable over Savage et al. and Hunter et al. Furthermore, each of the dependent claims recites further distinguishing features of particular utility.

Conclusion

Applicants respectfully submit that all of the pending claims are patentably distinguishable and allowable over the prior art of record. The cited references, either alone or in combination, do not teach or suggest the claimed invention.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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